Harris Corporation
Additional Information
Nationwide Public Safety Broadband Network
Reference Ex Parte Dated November 12, 2010

Based on our technical expertise, current knowledge, and review of the Alcatel-Lucent ("ALU") Ex Parte posted on 11/10/10, Harris provides the following information:

1. We are in agreement that PLMN ID's be assigned at the State/Regional level.
2. We agree that there should be a National PLMN ID that may be used to provide a "virtual" national network used for roaming. The virtual network may be implemented using the regional network infrastructure and in this case would not require any additional hardware.
3. The use of a PLMN ID may also be used for non-regionally homed users such as federal users. In this case if the non-homed users were not administered within any regional HSS, their would be a requirement for a National HSS for these users requiring additional hardware and a backhaul from the regional MME's to the National HSS for authentication and authorization purposes. This may be deployed in conjunction with a 3rd party clearinghouse. In this scenario, the use of a National PLMN ID additionally provides a means for roaming between regions during the deployment phase when regions may not have backhaul or inter-regional communications yet established.
4. Harris' interpretation of the NIST proposal is the use of the National PLMN ID for all roaming users with a uniform QoS configuration for every roaming subscriber. That roaming QoS configuration could be best effort services with an Aggregate Maximum Bit Rate. In addition to the use of a National PLMN ID for roaming, Harris supports the use of roaming between Home regional networks based on established roaming agreements and Home PLMN IDs. This could be limited to roaming between two regions, or be expanded over time to include up to all 50 regions. This scenario enables situations like adjacent regions with frequent roaming scenarios to include customized QoS capabilities tailored for roaming subscribers. These frequent roamers could then be provided with communications profiles that go beyond the single QoS configuration proposed for the National PLMN ID roaming architecture. No additional hardware is required for this scenario.
5. The ALU presentation covers Nation Wide Roaming using a National PLMN ID to create a virtual network. That and additional scenarios are covered above.
6. Harris believes the inclusion of an option for multiple cores with hierarchical HSS's within a Region all using the Regional PLMN enables flexible licensing of spectrum and phased deployments of networks while also providing redundancy between the sub-regions and ultimately the Regional Core. Harris agrees that an initially deployed sub-region core by an early waiver recipient may optionally become the Regional/State core. Another benefit of multiple cores is their ability to provide geographic redundancy.
7. Backhaul: Adjacent states may have microwave or fiber interconnection. Another option that has been explored includes connection over the public Internet. Deployment of this option requires additional study in the areas of security and sustainable backhaul rate requirements. Clearing houses may also be used for data backhaul in addition to authentication and authorization. Harris believes that dedicated backhaul is desirable for regional roamers in order to allow for the offering of true QoS to these roaming users.

8. Harris believes the “local breakout” roaming architecture provides a solution for less critical or every day network access to visiting users. Email and browsing are examples of applications which are particularly suited to the local breakout roaming architecture. In addition, users may use the local breakout roaming architecture to VPN back to their home network. There could exist a “basic” QoS and Priority Access definition for all visiting users with additional QoS and Priority Access definitions for regions that establish agreements between each other.

9. The question was asked about whether there are requirements at the national level that need to be addressed and whether at the national level there should be application sets that are required. Harris believes that roaming users should be offered a defined QoS level and network access, either through local breakout or home routed traffic. Harris believes there should be an overarching national agreement for ALL roamers, but that individual entities can have other agreements that provide advanced services as described above. Harris believes that roaming users should, at a minimum, be offered defined network access to either their home network or the internet.

10. Security: Harris believes the standard 3GPP security features defined for the airlink and communications between the network nodes sufficient for the deployment of a secure network. User authentication is a mutual paradigm that is widely accepted by the telecommunications community. In addition to the 3GPP LTE security definitions, Harris advocates the use of Information Assurance procedures, including but not limited to common practices such as the use of secure VPN’s between the terminals and the network and the deployment of firewalls within the network core.

11. In the Waiver Order, 5 Applications were listed as being available to Roamers locally and nationally. This list was created by the user community during the NPST BBTF evaluation of LTE as a viable technology for a Nationwide Broadband Public Safety Network. Harris supported the evaluation of these applications in an advisory capacity but believes that it is the user community’s responsibility to define the required supported application set. Harris has deployed multiple 3rd party implementations of the applications listed below. There is no restriction on the ability to deploy these applications, but the actual implementation requirements are in the arena of the end provider.

    > *46. Applications. We also agree that there are several applications that can and should be supported by initially deployed systems." In this respect, consistent with the NPSTC BBTF Report and to ensure that there are a common set of initial applications available on an interoperable, nationwide basis, we require, as a condition of waiver, that Petitioners' systems initially support the following applications: (I) Internet access; (2) VPN access to any authorized site and to home networks; (3) a status or information "homepage;" (4) access to responders under the Incident Command System;" (5) and field-based server applications.*

12. Harris generally agrees with Alcatel Lucent’s view as presented in the November 10th Ex Parte with the addition of features and views we have discussed in this document. The one area where we have differing views is in regards to ALU’s position against multiple HSS’s within a Region. Harris believes the advantages in spectrum licensing and deployment flexibility outweighs the minimal increase in complexity of network management and maintenance. Further, Harris believes that local regions should be allowed to make this decision about the use of a core with multiple HSS’s.